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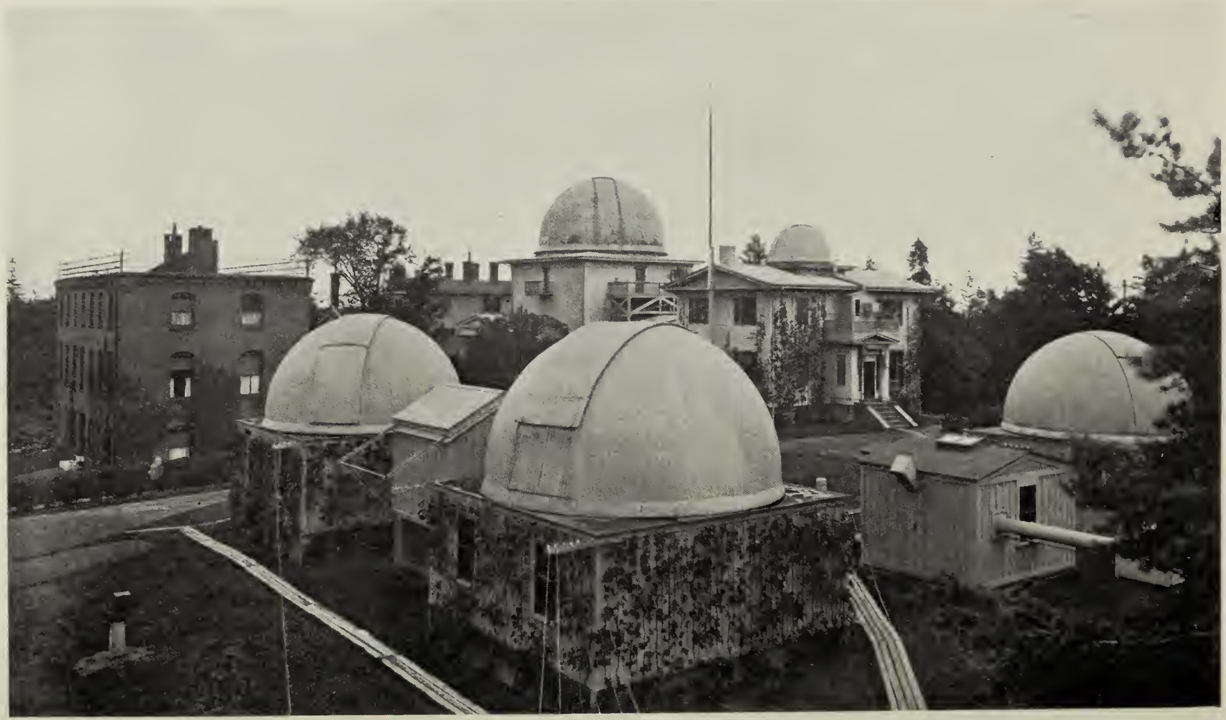

Cambridge Station

THE

ASTRONOMICAL OBSERVATORY

OF

HARVARD COLLEGE

SECOND THOUSAND

CAMBRIDGE, MASS.
1904

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THE ASTRONOMICAL OBSERVATORY
OF
HARVARD COLLEGE.

The Astronomical Observatory of Harvard College may be regarded as having been established by the appointment of the late William Cranch Bond as Astronomical Observer. He entered upon his duties at the beginning of 1840. The public interest in Astronomy, excited by the appearance of the Comet of 1843, enabled funds to be obtained by subscription for the purchase of a large telescope, which, when mounted in 1847, had no superior, and but one equal, in the world.

The resources of the Observatory have since that time been increased by various subscriptions, gifts, and bequests, of which those resulting from the wills of Edward B. Phillips, in 1849, and Robert Treat Paine, in 1886, provide for a large part of the general expenses of the institution.

The Henry Draper Memorial, established by Mrs. Henry Draper of New York, in 1886, for the continuation of the researches interrupted by the death of her distinguished husband, furnishes the means of studying the spectra and other physical properties of the stars.

A fund was left by the late Uriah A. Boyden to establish an observing station at an altitude where the atmospheric conditions would be favorable to astronomical investigation, and this fund was transferred by its trustees, in 1887, to the Observatory. After numerous trials of different locations in Colorado, California, Chile, and Peru, the proposed station was established near Arequipa, Peru, at an altitude of 8,060 feet. By thus maintaining a station south of the equator, work at Cambridge may be extended to the southern stars. Accordingly, all important researches undertaken here are made to include stars in all parts of the sky, from the north to the south pole.

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The entire invested capital of the Observatory is now nearly one million dollars, and its annual income about fifty thousand dollars. The expenditures for buildings and large instruments have been small, and have been paid mainly from the income. About forty persons, one half of whom are women, take part in the work of the Observatory.

CAMBRIDGE STATION.

The observation of the northern stars, the study, care, and storing of all the photographs, the discussion of the results, and the preparation for publication, are included in the work at the Cambridge Station of the Observatory. The principal instruments there are the 15-inch Equatorial, the 8-inch Meridian Circle, the 24-inch Reflector, the 12-inch Meridian Photometer, the 11-inch Draper Telescope, and the 8-inch Draper Telescope. Numerous smaller instruments are also in regular use.

About 150,000 photographs are contained in a fire-proof building especially constructed for them. They furnish the only history that exists of the entire stellar universe. All stars from the north to the south pole, and of the eleventh magnitude and brighter, appear on a large number of photographs. Their position and brightness are thus shown on from one hundred to two hundred nights, distributed over the last fifteen years. The number of photographs of the bright stars is much greater. Seven thousand photographs have been taken with the Bruce Telescope, and many of them show stars as faint as the sixteenth magnitude. The spectra of all stars as faint as the ninth magnitude, and many that are fainter, are shown on the Draper Memorial photographs.

AREQUIPA STATION.

The principal instruments are the 24-inch Bruce Photographic Telescope, the 13-inch Boyden Telescope, the 8-inch Bache Telescope, and the 4-inch Meridian Photometer. The Bruce Telescope, the gift of the late Miss Catherine W. Bruce, of New York, has a photographic doublet of twenty-four inches aperture as an objective, and is the largest instrument of the kind as yet constructed. Photographs covering a region of six by seven degrees are obtained with it, on a scale of one minute to a millimetre. For several years, and until the material for a determination of the climatic conditions had been collected, observations were maintained at a line of meteorological stations, beginning at the Pacific and crossing the Andes to the valley of the Amazon. These stations were located at Mollendo (altitude 100 ft.), La Joya (4,150), Arequipa (8,060), Alto de los Huesos (13,300), Mt. Blanc (15,600), El Misti (19,200), Vincocaya (14,600), Puno (12,500), Cuzco (11,000), and Santa Ana (3,000). Self-recording instruments were maintained, and publication of the results is now in progress.

THE BLUE HILL METEOROLOGICAL OBSERVATORY.

This Observatory, established by Mr. A. L. Rotch in 1885, is maintained and directed by him. Complete records are obtained by direct observation, and by self-recording instruments. Special investigations have also been carried on, such as the study of clouds, and the exploration of the upper air by meteorographs attached to kites. An altitude of 15,800 feet has in this way been reached. The results are published in full in the Annals of the Harvard Observatory.

LIBRARY.

The library at the Cambridge Station contains about 11,000 volumes and 18,000 pamphlets. The library at Blue Hill contains about 5,000 volumes and 3,400 pamphlets. A working library containing several hundred volumes is also maintained at Arequipa.

PUBLICATIONS.

The results of the work of the Observatory fill fifty quarto Volumes of Annals. Eighty Circulars have also been issued, giving a brief and prompt publication of discoveries made here and of new methods of work, also Annual Reports and minor publications. A series of neostyle bulletins and telegrams is used for such discoveries, made here or elsewhere, as require immediate announcement.

Policy of the Observatory.

The policy of the Astronomical Observatory of Harvard College, since its establishment, has been the development of the physical side of Astronomy. While much time and money have been spent on the determination of the positions and motions of the stars, the work has been mainly in determining their brightness, spectra, and other physical properties. In recent years, routine investigations on an extensive scale, each occupying many years, have constituted the principal portion of the work. When practicable, every investigation is made to cover the entire sky, the northern stars being observed at Cambridge, and the southern at the station in Arequipa. An attempt is made to secure the most favorable conditions for observation and to employ new and improved methods to compensate for the lack of instruments of the largest size.

This work is greatly extended and facilitated by the collection of photographs mentioned above, and an endowment should be provided for utilizing it to the utmost. When any new object is discovered, we have here the only existing means of studying its past history for many years. As examples may be mentioned Nova Aurigae, the planet Eros, and Comet a, 1904. The only evidence of the existence of these bodies before they were discovered was that contained in the Harvard photographs. The changes of all newly discovered variables, or other objects, can thus be traced back through the last fifteen years. Doubtless many objects of the greatest interest, but not yet discovered, might be found from these plates.

The Observatory now aims to cover a still wider field. Large sums of money have hitherto been given to Astronomy, much of which, for lack of good advisers or of a technical knowledge of the subject by the donor, has been unwisely expended. There are, therefore, many large telescopes which are idle, observatories insufficiently endowed, and skilful astronomers whose appliances for research are entirely inadequate. It is the object of this Observatory to supply these needs, by securing a Fund the income of which could be used for aiding astronomers in all parts of the world. Such a Fund, conscientiously administered, either here or elsewhere, should give far greater scientific returns than would be possible if expended at a single station. It would aid the work, not of a single astronomer, but of a selected number of the most eminent specialists in the world, and by coöperation would enable investigations, too large to be undertaken at a single observatory, to be conducted successfully. The sympathetic interest of experts, ready and able to make substantial grants, would greatly aid the work of young or isolated astronomers of ability.

The character and variety of the work is illustrated by the list given below, of the principal discoveries, inventions, new methods of work, and investigations, a part or the whole of which have been made at this Observatory.

EARLY WORK.

The Electric Method of Determining Longitudes and Star Places. 1848. (Annals **1**, pages xxiii and xlix.) W. C. Bond, Director.

The Distribution of Accurate Time Signals by Telegraph. 1851. (Annals **1**, page clxx.)

The First Determination of Precise Positions of very Faint Stars. 1852. (Annals **1**, Part II, **2**, Part II, and **6**.)

Study of the Planet Saturn, and Discovery of the Faint Satellite, Hyperion. 1847 to 1856. (Annals **2**, Part I.)

Detailed Study of Donati's Comet. 1858. (Annals **3**.) G. P. Bond, Director.

Observations of the Great Nebula of Orion. 1857 to 1865. (Annals **5**.)

Observations of Solar Spots. 1847 to 1849. (Annals **7**.)

Application of Photography to Astronomy. 1850 and 1857.

Determination, by the U. S. Coast Survey, of the Starting Point of Longitudes in the United States, in 1866, 1870, and 1872. Joseph Winlock, Director.

A Series of Astronomical Engravings. 1876. (Annals **8**.)

Photometric Researches, by C. S. Peirce. 1872 to 1875. (Annals **9**.)

Catalogue of 8627 Stars in Zones +50° to +55° and other stars, observed by William A. Rogers. 1870 to 1884. (Annals **10**, **12**, **15**, **16**, **25**, **35**, and **36**.)

LATER WORK.

Photometric Comparison of Adjacent Stars. (Annals **11**, Part I.)

First Photometric Measures of very Faint Stars. (Annals **11**, Part II.)

Photometric Measures of Jupiter's Satellites while undergoing eclipse, 1879 to 1904. 762 Eclipses. (Annals **52**, in press.)

Standard Magnitudes of large numbers of stars, on a uniform scale, observed with the Meridian Photometer. All stars of sixth magnitude and brighter, north of — 30° (Annals **14**, **23**, and **44**); south of — 30° (Annals **34**); stars of seventh magnitude and brighter (Annals **45** and **46**); stars from the seventh to the tenth magnitudes (Annals **24** and **34**). About 94,000 photometric settings have been made with the 2-inch, and 1,000,000 with the 4-inch, Meridian Photometers.

Photometric Magnitudes of Stars of the thirteenth magnitude and brighter, determined with the 12-inch Meridian Photometer. About 400,000 settings have been made with this instrument.

Precise Photometric Determinations of Light Curves of Variables, with the 15-inch Equatorial. (Annals **49**, in press.)

Continuous following of Variables of Long Period, by Argelander's Method, 1889 to 1904. (Annals **37**.)

Catalogue of 7,959 Stars in Zones — 10° to — 14°, observed with the Meridian Circle.

The Almucantar, 1884 to 1885. (Annals **17**.)

Geographical Position of the Arequipa Station. (Annals **48**, No. 9.)

Blue Hill Meteorological Observations. 1887 to 1904. (Annals **20**, **30**, **40**, **42**, and **43**.)

Observations of the New England Meteorological Society. 1888 to 1895. (Annals **21**, **31**, and **41**.)

Meteorological Observations on Pike's Peak. 1874 to 1888. (Annals **22**.)

Miscellaneous Researches, mainly Photographic. (Annals **18**, **29**, **33**, **41**, and **48**.)

Photographic Researches with 8-inch Doublets. (Annals **26**.)

The Draper Catalogue, giving the Spectra of 10,351 Stars. (Annals **27**.)

Detailed Study of Spectra of 681 northern and 1,122 southern Stars. (Annals **28**.)

Comparison Stars and Light Curves of about 200 Variable Stars, discovered from the photographs at Cambridge. (Annals **47**, in press.)

The Moon and Planets. (Annals **32**.)

A Photographic Atlas of the Moon. (Annals **51**.)

Phoebe, the Ninth Satellite of Saturn. (Annals **53**, No. 3.)

The Cluster ω Centauri. Measures of 128 Variables on 124 plates, and Discussion of their Light Curves. (Annals **38**.)

Peruvian Meteorology. (Annals **39**.)

Stars having Peculiar Spectra, found from the Draper Photographs, with a Classification including Variables of Long Period.

Photographic Photometry, including 40,000 Standards, one in each square degree, and 8,000 Stars measured out of focus.

A Photographic Map of the Sky, consisting of 55 glass plates, distributed among astronomers at less than cost. It is estimated that nearly 2,000,000 stars appear on this set of plates.

Needs of the Observatory.

The organization of the Observatory at the present time enables it to undertake large pieces of routine work in what is believed to be an efficient and economical manner. Its location enables it to secure at reasonable salaries the services of an indefinite number of assistants competent to carry on important routine work. An almost unlimited amount of valuable material might be extracted from the collection of photographs mentioned above. It is believed that the sum of $5,000 annually would permit a corps of six or eight assistants to be employed in this way, the results to be reduced, and published every year in a quarto volume of the Annals, containing two or three hundred pages.

The principal buildings of the Observatory are of wood, old, and liable to destruction by fire. The library is one of the finest of its kind, and its loss would be irreparable. A modern, fire-proof, building to replace the main building could be erected for $100,000. Instead of this, two smaller buildings, one to contain the library, the other for the photographic laboratory and workshop, could be erected for about $20,000 each. Either of these buildings would form an excellent memorial. The reflector of five feet aperture, which belonged to the late A. A. Common, is offered for sale for $7,500. Such an instrument would be admirably adapted to determining the brightness of the faintest stars yet known, and would greatly aid in extending our knowledge of the limits of the Universe. The sum of $50,000 to $100,000, if expended during the next few years, would supply nearly all of these wants. The anonymous fund

(1902) of $20,000 was used for such objects, and illustrates the results that might be obtained. With it, a three-story fire-proof building was erected which will safely store 200,000 glass photographs, a reflector of 24-inches aperture has been constructed, a second similar reflector is in process of construction, and after its completion a balance of several thousand dollars will remain. Most important of all, if the plan outlined above, for aiding other astronomers, could be wisely and successfully carried out with competent advisers, it would do more for advancing Astronomy to a higher plane than any other expenditure that could be made.

Below is a list of the Annals, with the titles, or subjects treated in them. A list is also given of the present officers of the Observatory, with the year of appointment. The departments are given in parentheses for those not appointed by the Corporation. It will be noticed that notwithstanding the large increase in the number of officers of the Observatory in recent years, the average term of office of the entire corps of forty-three officers is 13.2 years. The average term for the half who have been here longest is 19.4 years, while for the eleven officers appointed by the Corporation it is 21.6 years.

List of Annals.

Vol. I. Part I.	History and Description of the Observatory, 1840–1855.
" " " II.	Zone Catalogue. Dec. 0° 0′ to + 0° 20′.
Vol. II. Part I.	Observations of the Planet Saturn.
" " " II.	Zone Catalogue. Dec. + 0° 20′ to + 0° 40′.
Vol. III.	Account of the Great Comet of 1858.
Vol. IV. Part I.	Catalogue of Standard Stars.
" " " II.	Observed Right Ascensions of 505 Stars.
Vol. V.	The Great Nebula of Orion.
Vol. VI.	Zone Catalogue. Dec. + 0° 40′ to + 1° 0′.
Vol. VII.	Observations of Solar Spots.
Vol. VIII. Part I	Historical Account of the Observatory, 1855–1876.
" " " II.	Astronomical Engravings.
Vol. IX.	Photometric Researches, 1872–1875.
Vol. X.	Meridian Circle Observations, 1871–1872.
Vol. XI. Part I.	Photometric Observations, 1877–1879. Double Stars.

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	Vol. XI. Part II.	Photometric Observations, 1877–1879. Faint Stars.
MC	Vol. XII.	Meridian Circle Observations, 1874–1875.
	Vol. XIII. Part I.	Micrometric Measurements, 1866–1881.
	" " " II.	Photometric Zone Observations, 1882–1886.
[illegible]	Vol. XIV. Part I.	Meridian Photometer, 1879–1882. Observations.
	" " " II.	Meridian Photometer, 1879–1882. Discussion.
	Vol. XV. Part I.	Catalogue of 1213 Stars.
	" " " II.	Zone Catalogue of 8627 Stars.
MC	Vol. XVI.	Observations of Fundamental Stars, 1870–1886.
	Vol. XVII.	The Almucantar, 1884–1885.
	Vol. XVIII. No. I.	Magnitude of Stars employed in various Nautical Almanacs.
	" " " II.	Discussion of the Uranometria Oxoniensis.
	" " " III.	Photometric Observations of Asteroids.
	" " " IV.	Total Eclipse of the Moon. Jan. 28, 1888.
	" " " V.	Total Eclipse of the Sun. Aug. 29, 1886.
—	" " " VI.	Detection of New Nebulae by Photography.
	" " " VII.	A Photographic Determination of the Brightness of the Stars.
	" " " VIII.	Index to Observations of Variable Stars.
	" " " IX.	Meridian Circle Observations of Close Polar Stars.
	" " " X.	Meridian Circle Observations of Stars near the South Pole.
X	Vol. XIX. Part I.	Meteorological Observations, 1840–1888.
	" " " II.	Zodiacal Light and Atmospheric Absorption.
	Vol. XX. Part I.	Blue Hill Met. Observations, 1887.
	" " " II.	Blue Hill Met. Observations, 1888.
Met	Vol. XXI. Part I.	Observations of N. E. Met. Society, 1888.
	" " " II.	Investigations of N. E. Met. Society, 1889.
	Vol. XXII.	Meteorological Observations on Pike's Peak, 1874–1888.
	Vol. XXIII. Part I.	Discussion of Observations with the Meridian Photometer.
—	" " " II.	Discussion of Observations with the Meridian Photometer.
X	Vol. XXIV.	Results of Observations with the Meridian Photometer.

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Vol. XXV.	Comparison of Positions of Stars.
Vol. XXVI. Part I.	Preparation and Discussion of the Draper Catalogue.
“ “ “ II.	Miscellaneous Investigations of the Henry Draper Memorial.
Vol. XXVII.	Draper Catalogue of Stellar Spectra.
Vol. XXVIII. Part I.	Spectra of Bright Stars.
“ “ “ II.	Spectra of Bright Southern Stars.
Vol. XXIX. No. I.	Meteorological Observations at Willows, during Solar Eclipse of 1889.
“ “ “ II.	Longitude of Smith College Observatory.
“ “ “ III.	Photometric Observations of Asteroids.
“ “ “ IV.	Observations of Variable Stars.
“ “ “ V.	Magnitude of Bright Stars north of + 70°.
“ “ “ VI.	Relative places of β Persei and Comparison Stars.
Vol. XXX. Part I.	Blue Hill Met. Observations, 1889.
“ “ “ II.	Blue Hill Met. Observations, 1890.
“ “ “ III.	Measurements of Cloud Heights and Velocities.
“ “ “ IV.	Discussion of the Cloud Observations.
Vol. XXXI. Part. I.	Investigations of N. E. Met. Society, 1890.
“ “ “ II.	Investigations of N. E. Met. Society, 1891.
Vol. XXXII. Part I.	Investigations in Astronomical Photography.
“ “ “ II.	Visual Observations of the Moon and Planets.
Vol. XXXIII. No. I.	Photometric Observations of Asteroids.
“ “ “ II.	Positions of Gegenschein.
“ “ “ III.	Positions of Luminous Bands in the Zodiacal Region.
“ “ “ IV.	Observations of Variable Stars by Argelander.
“ “ “ V.	Observations of Variable Stars by Schönfeld.
“ “ “ VI.	Observations of Variable Stars by Schmidt.
“ “ “ VII.	Observations of Nebulae.
“ “ “ VIII.	Observations of Comets.
“ “ “ IX.	Satellites of Mars in 1881–1882.
“ “ “ X.	Durchmusterung Zones, + 9°, + 19°, and + 29°.
“ “ “ XI.	Accessory Series of Observations with the Meridian Circle.
Vol. XXXIV.	7922 Southern Stars observed with the Meridian Photometer.

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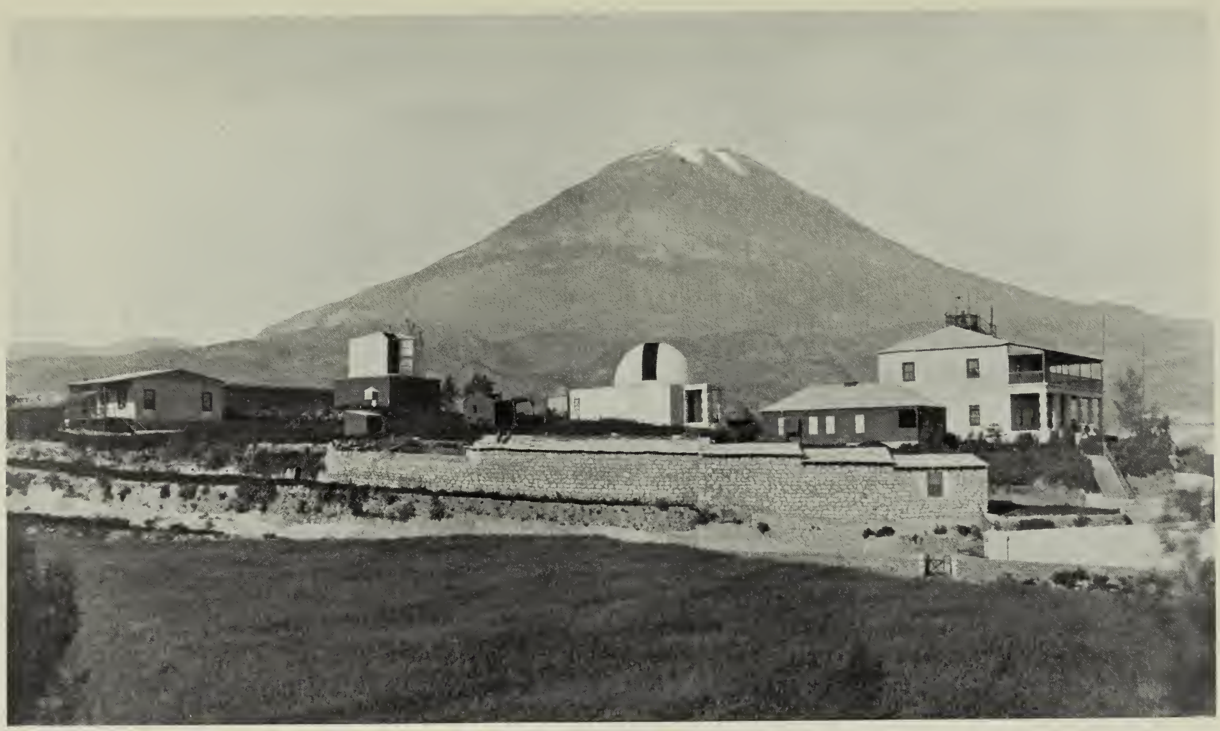
Vol. XXXV.	Journal of the Zone Observations.
Vol. XXXVI.	Journal of the Zone Observations.
Vol. XXXVII. Part I.	Observations of Circumpolar Variable Stars.
“ “ “ II.	Observations of Fifty-eight Variable Stars of Long Period.
Vol. XXXVIII.	Variable Stars in the Cluster ω Centauri.
Vol. XXXIX. Part I.	Peruvian Meteorology, 1888–1890.
“ “ “ II.	Peruvian Meteorology, 1891–1895. (In press.)
Vol. XL. Part I.	Blue Hill Met. Observations, 1891.
“ “ “ II.	Blue Hill Met. Observations, 1892.
“ “ “ III.	Blue Hill Met. Observations, 1893.
“ “ “ IV.	Blue Hill Met. Observations, 1894.
“ “ “ V.	Blue Hill Met. Observations, 1895.
Vol. XLI. No. I.	Observations of N. E. Weather Service, 1892.
“ “ “ II.	Observations of N. E. Weather Service, 1893.
“ “ “ III.	Observations of N. E. Weather Service, 1894.
“ “ “ IV.	Observations of N. E. Weather Service, 1895.
“ “ “ V.	The Meteoric Shower of November 13, 1897.
“ “ “ VI.	Forms of Images in Stellar Photography.
“ “ “ VII.	Different Forms of Apparatus in Meridian Observations.
“ “ “ VIII.	Magnitudes of 923 Fixed Stars observed by Sir John Herschel.
“ “ “ IX.	Absorption of Photographic Wedges.
Vol. XLII. Part I.	Observations of Blue Hill Meteorological Observatory, 1896.
“ “ “ II.	Observations of Blue Hill Meteorological Observatory, 1897 and 1898.
Vol. XLIII. Part I.	The Eclipse Cyclone and the Diurnal Cyclones.
“ “ “ II.	Observations of Blue Hill Meteorological Observatory, 1899 and 1900.
“ “ “ III.	Observations of Blue Hill Meteorological Observatory, 1901 and 1902.
Vol. XLIV. Part I.	Photometric Revision of the Harvard Photometry.
“ “ “ II.	Reduction of Observations made with the Meridian Photometer.

Vol. XLV.	A Photometric Durchmusterung.
Vol. XLVI. Part I.	Observations with the Meridian Photometer.
" " " II.	Observations of Variable Stars with the Meridian Photometer.
Vol. XLVII.	A Photographic Study of Variable Stars. (In press.)
Vol. XLVIII. No. I.	Stars near the North Pole.
" " " II.	Observations of the Light of Nova Persei, No. 2.
" " " III.	A Provisional Catalogue of Variable Stars.
" " " IV.	A Catalogue of 1520 Bright Stars.
" " " V.	Distribution of Stars.
" " " VI.	Meridian Circle Observations of Eros and Comparison Stars.
" " " VII.	Meridian Circle Observations of Nova Persei, No. 2.
" " " VIII.	Intensity of Atmospheric Lines in the Solar Spectrum.
" " " IX.	Geographical Position of the Arequipa Station.
Vol. XLIX.	Photometric Observations made with the East Equatorial. (In press.)
Vol. L.	Revised Harvard Photometry. (In preparation.)
Vol. LI.	A Photographic Atlas of the Moon.
Vol. LII.	Eclipses of Jupiter's Satellites. (In press.)
Vol. LIII. No. I.	Stars near the South Pole.
" " " II.	Circumpolar Stars.
" " " III.	Phoebe, the Ninth Satellite of Saturn.
" " " IV.	A Study of Eratosthenes.
Vol. LIV.	12-inch Meridian Photometer. (In preparation.
Vol. LV.	Bibliography of Variable Stars. (In preparation.)
Vol. LVI.	Miscellaneous Draper Researches. (In preparation.)
Vol. LVII.	Photographic Observations of Variable Stars. (In preparation.)
Vol. LVIII.	Blue Hill Meteorological Observations. (In preparation.)

OFFICERS OF THE OBSERVATORY.

Arthur Searle, *Phillips Professor of Astronomy*	1869
Edward Charles Pickering, *Director, Paine Professor of Astronomy*	1876
Oliver Clinton Wendell, *Assistant Professor of Astronomy*	1879
Selina Cranch Bond. (Meridian Circle.)	“
John Rayner Edmands, *Assistant*	1880
Williamina Paton Fleming, *Curator of Astronomical Photographs*	1881
Abbott Lawrence Rotch, *Director of Blue Hill Observatory*	1886
Henry Helm Clayton. (Blue Hill.)	“
Willard Peabody Gerrish, *Assistant*	“
Louisa Winlock. (Meridian Circle.)	“
William Henry Pickering, *Assistant Professor of Astronomy*	1887
Louisa Denison Wells. (Library of Photographs.)	“
Hobart William Winkley. (Library.)	“
Edward Skinner King, *Assistant*	“
Solon Irving Bailey, *Associate Professor of Astronomy*	“
Sterling Price Fergusson. (Blue Hill.)	“
Mabel Cushman Stevens. (Library of Photographs.)	1888
Florence Cushman. (Meridian Photometer.)	“
John Augustine Dunne, *Assistant*	“
Imogen Willis Eddy. (Meridian Circle.)	1889
Edith Frances Gill. (Library of Photographs.)	“
Lillian L. Hodgdon. (Meridian Circle.)	“
Evelyn Frances Leland. (Library of Photographs.)	“
Harriet Ida Stevens. (Library of Photographs.)	1891
Amy Jackson McKay. (Meridian Photometer.)	“
Mabel Abbie Gill. (Library of Photographs.)	1892
Ida Elizabeth Woods. (Library of Photographs.)	1893
Harold Roy Colson. (Photographic Department.)	1895
Henrietta Swan Leavitt. (Photographic Researches.)	“
Juan E. Muniz. (Arequipa.)	“
Annie Jump Cannon. (Photographic Researches.)	1896
Royal Harwood Frost. (Arequipa.)	“
Sarah Elizabeth Breslin. (Library of Photographs.)	1898
Leon Campbell. (East Equatorial.)	1899
Maude Evangeline Harriman. (Library of Photographs.)	1900
William Wiley White. (Meridian Photometer.)	“
Marion Field Michaelis. (Meridian Circle.)	“
Charles Edward McCullar. (Photographic Department.)	“
Benjamin Franklin Wyeth, Jr. (Arequipa.)	1902
Edmund S. Manson, Jr. (Arequipa.)	“
Lewis Alexander Wells. (Blue Hill.)	1903
Ida May Stevens. (Library of Photographs.)	1904
Guy Hill. (Photographic Department.)	“



Arequipa Station

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